

Response to Office Action mailed March 23, 2006
U.S. Application No. 10/541,290

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (currently amended) A pile anchor, comprising:
 - a. an elongated hollow member having an upper end, an open lower end and a longitudinal axis;
 - b. a two-way flow valve located on said elongated hollow member;
 - c. a load transfer device for connecting an anchor line to said elongated hollow member, said load transfer device fixed to the outer surface of said elongated hollow member and positioned on the circumference of said elongated hollow member; and
 - d. a first longitudinally disposed vane extending outwardly from the outer surface of said elongated hollow member; and
 - e. a second longitudinally disposed vane extending outwardly from said outer surface of said elongated hollow member; wherein said first longitudinally disposed vane is attached through a first slot in said elongated hollow member and said second longitudinally disposed vane is attached through a second slot in said elongated hollow member.
2. (original) The pile anchor of claim 1, further comprising a plurality of two-way flow valves located on said elongated hollow member.
3. (canceled)
4. (currently amended) The pile anchor of ~~claim 3~~ claim 2, wherein said first longitudinally disposed vane and said second longitudinally disposed vane have a longitudinal length that is about 50 to 100 percent of the average longitudinal length of the elongated hollow member.

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5. (original) The pile anchor of claim 4, wherein said first longitudinally disposed vane and said second longitudinally disposed vane have a radial length that is about 5 to 90 percent of the average diameter of the elongated hollow member.
6. (original) The pile anchor of claim 5, wherein said elongated hollow member is substantially tubular in shape and has a substantially circular cross sectional area.
7. (original) The pile anchor of claim 6, wherein said upper end of said elongated hollow member is closed and wherein said valves are located on the upper end of said elongated hollow member, said valves adapted for regulating fluid flow across said upper end of said elongated hollow member.
8. (original) The pile anchor of claim 7, wherein said load transfer device is positioned at the zero degree location on the circumference of said elongated hollow member, said first longitudinally disposed vane is positioned between about 25 degrees and about 155 degrees from said zero degree location, and said second longitudinally disposed vane is positioned between about 205 degrees and about 335 degrees from said zero degree location.
9. (original) The pile anchor of claim 8, wherein said first longitudinally disposed vane is positioned between about 45 degrees and about 135 degrees from said zero degree location, and said second longitudinally disposed vane is positioned between about 225 degrees and about 315 degrees from said zero degree location.
10. (original) The pile anchor of claim 9, further comprising at least one additional longitudinally disposed vane extending outwardly from the outer surface of said elongated hollow member positioned between about 135 degrees and about 225 degrees from said zero degree location.
11. (original) The pile anchor of claim 10, further comprising at least one additional longitudinally disposed vane extending outwardly from the outer

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surface of said elongated hollow member positioned between about 45 degrees on each side of said zero degree location on the outer surface of said tubular member.

12. (original) The pile anchor of claim 8, wherein said load transfer device comprises a padeye.
13. (canceled)
14. (currently amended) The pile anchor of ~~claim 13~~ claim 9, wherein said first and second slots are diametrically opposed, and said first and second longitudinally disposed vanes comprise a single vane extending through said first and second slots in said elongated hollow member.
15. (currently amended) A method of anchoring a pile anchor into the floor of a body of water, comprising:
installing a pile anchor into the floor of said body of water, said pile anchor including (i) an elongated hollow member having an upper end, an open lower end, a longitudinal axis and a transverse cross section, (ii) a two-way flow valve located on said elongated hollow member, (iii) a load transfer device for connecting an anchor line to said elongated hollow member, said load transfer device fixed to the outer surface of said elongated hollow member and positioned on the circumference of said elongated hollow member, and (iv) a first longitudinally disposed vane extending outwardly from the outer surface of said elongated hollow member, and (v) a second longitudinally disposed vane extending outwardly from said outer surface of said elongated hollow member; wherein said first longitudinally disposed vane is attached through a first slot in said elongated hollow member and said second longitudinally disposed vane is attached through a second slot in said elongated hollow member.
16. (original) The method of claim 15, wherein said elongated hollow member further comprises a plurality of two-way flow valves.

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17. (canceled)
18. (currently amended) The method of ~~claim 17~~ claim 16, wherein said first longitudinally disposed vane and said second longitudinally disposed vane have a radial length that is about 5 to 90 percent of the average diameter of the elongated hollow member.
19. (original) The method of claim 18, wherein said first longitudinally disposed vane and said second longitudinally disposed vane have a longitudinal length that is about 50 to 100 percent of the average longitudinal length of the elongated hollow member.
20. (original) The method of claim 19, wherein said load transfer device is positioned at the zero degree location on the circumference of said elongated hollow member, said first longitudinally disposed vane is positioned between about 45 degrees and about 135 degrees from said zero degree location, and said second longitudinally disposed vane is positioned between about 225 degrees and about 315 degrees from said zero degree location.
21. (original) The method of claim 19, wherein said elongated hollow member is substantially tubular in shape and has a substantially circular cross sectional area.
22. (original) The method of claim 21, wherein said upper end of said elongated hollow member is closed and wherein said valves are located on the upper end of said elongated hollow member, said valves adapted for regulating fluid flow across said upper end of said elongated hollow member.
23. (original) The method of claim 22, wherein said elongated hollow member further comprises at least one additional longitudinally disposed vane extending outwardly from the outer surface of said elongated hollow member positioned between about 135 degrees and about 225 degrees from said zero degree location.

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24. (original) The method of claim 23, wherein said elongated hollow member further comprises at least one additional longitudinally disposed vane extending outwardly from the outer surface of said elongated hollow member positioned between about 45 degrees on each side of said zero degree location on the outer surface of said tubular member.
25. (original) The method of claim 24, wherein said load transfer device comprises a padeye.
26. (canceled)
27. (currently amended) The method of ~~claim 26~~ claim 15, wherein said first and second slots are diametrically opposed, and said first and second longitudinally disposed vanes comprise a single vane extending through said first and second slots in said elongated hollow member.
28. (original) The method of claim 20, wherein said installation step includes:
- a. positioning said pile anchor at an inclined angle with respect to the sea floor, the top of said pile anchor being inclined in a direction away from the direction of a lateral loading; and
 - b. inserting said pile anchor at least partially into said sea floor, said pile anchor substantially maintaining said inclined angle.
29. (currently amended) A method of producing offshore hydrocarbon resources, comprising:
- a. anchoring an offshore structure to the seabed through use of a pile anchor system, said pile anchor system including (i) an elongated hollow member having an upper end, an open lower end, a longitudinal axis and a transverse cross section, (ii) a two-way flow valve located on said elongated hollow member, (iii) a load transfer device for connecting an anchor line to said elongated hollow member, said load transfer device fixed to the outer surface of said elongated hollow member and positioned on the circumference of said elongated hollow member, and (iv) a first longitudinally disposed vane extending

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- outwardly from the outer surface of said elongated hollow member;
and (v) a second longitudinally disposed vane extending outwardly from said outer surface of said elongated hollow member;
- b. connecting said load transfer device to an offshore structure; and
- c. producing hydrocarbon resources; wherein said first longitudinally disposed vane and said second longitudinally disposed vane are attached to the elongated hollow member at an angle relative to a plane tangent to the elongated hollow member and are located in two separate planes that form an angle at the point of attachment; or wherein said first and second longitudinally disposed vanes are curved, semicircular, non-planar vanes; or wherein said first and second longitudinally disposed vanes are a single planar vane attached to the back-side of the elongated hollow member.

30. (original) The method of claim 29, further comprising transporting said hydrocarbon resources to shore.

31. (new) A method of producing offshore hydrocarbon resources, comprising:

- a. anchoring an offshore structure to the seabed through use of a pile anchor system, said pile anchor system including (i) an elongated hollow member having an upper end, an open lower end, a longitudinal axis and a transverse cross section, (ii) a two-way flow valve located on said elongated hollow member, (iii) a load transfer device for connecting an anchor line to said elongated hollow member, said load transfer device fixed to the outer surface of said elongated hollow member and positioned on the circumference of said elongated hollow member, (iv) a first longitudinally disposed vane extending outwardly from the outer surface of said elongated hollow member, and (v) a second longitudinally disposed vane extending outwardly from the outer surface of said elongated hollow member;
- b. connecting said load transfer device to an offshore structure; and

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- c. producing hydrocarbon resources, wherein each of said first longitudinally disposed vane and said second longitudinally disposed vane comprises two vane elements, a first vane element attached perpendicular to a plane tangent to said elongated hollow member and a second vane element attached to each of the first vane elements at an angle.
32. (new) The method of claim 31, further comprising transporting said hydrocarbon resources to shore.
33. (new) A pile anchor, comprising:
- a. an elongated hollow member having an upper end, an open lower end and a longitudinal axis;
 - b. a plurality of two-way flow valves located on said elongated hollow member;
 - c. a load transfer device for connecting an anchor line to said elongated hollow member, said load transfer device fixed to the outer surface of said elongated hollow member and positioned on the circumference of said elongated hollow member;
 - d. a first longitudinally disposed vane extending outwardly from the outer surface of said elongated hollow member; and
 - e. a second longitudinally disposed vane extending outwardly from said outer surface of said elongated hollow member; wherein said first longitudinally disposed vane is attached through a first slot and said second longitudinally disposed vane is attached through a second slot in said elongated hollow member; and wherein said first longitudinally disposed vane and said second longitudinally disposed vane have a radial length that is about 5 to 90 percent of the average diameter of the elongated hollow member and a longitudinal length that is about 50 to 100 percent of the average longitudinal length of the elongated hollow member; and wherein said load transfer device is positioned at the zero degree location on the circumference of said elongated hollow

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member, said first longitudinally disposed vane is positioned between about 45 degrees and about 135 degrees from said zero degree location, and said second longitudinally disposed vane is positioned between about 225 degrees and about 315 degrees from said zero degree location.